



User Manual

Modem Router Cellular Model USR-G781

File Version: V1.0.06.03





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Introduction

The USR-G781 is a cellular modem router 4G/3G DTU which apply to LTE WCDMA and GPRS. Serial RS232 or RS485 can be transfer to Internet server via LTE technology. USR-G781 has two Ethernet port for networking accessory.

USR-G781 is an industrial networking device developed by PUSR®, a registered trademark of Jinan USR IOT Technology Limited.

This manual is for the cellular modem router model USR-G781 and its versions (4M) according to the operation bands in the destination countries (4M: -E, -A, -AU and -43).

Version model (4M)	Region	Supported LTE bands
-AU	For Australia, New Zealand and Latin America	B1, B2, B3, B4, B5, B7, B8, B28, B40
-E	For EMEA & APAC (Europe, Asia, Middle East, Africa)	B1, B3, B7, B8, B20
-A	For North America (USA, Canada)	B2, B4, B5, B12, B13, B14, B66, B71
-43	For part of APAC (China)	B1, B3, B5, B8 B34, B38, B39, B40, B41

Note Important:

In some documents, these versions 4M: -AU, -E, -A and -43 are also show as models USR-G781-AU, USR-G781-E, USR-G781-A and USR-G781-43 respectively, but not on the device label, where only the general model is show as USR-G781 and the requested version is specified after 4M.

For example, a device ordered from PUSR® for Latin America would be as follows: Model: USR-G781 and 4M: -AU



Note: SN, MAC and IMEI are unique for each device.

Figure 1 Device Label





Features

- ARM 9 core and Linux system based.
- Supports 2G 3G and 4G LTE. Different version for America, Europe, Australia and other areas.
- Support 2 Ethernet RJ45 port. One LAN port, and another one can be set as WAN port or LAN port.
- Support 1 SIM card socket.
- Support PPTP VPN. LT2P, IPSEC and Open VPN are on developing.
- Support DDNS, static routing and firewall.
- Support NTP and clock synchronization.
- Support Web Server configuration.
- Supports 4 connections online simultaneously, supports TCP and UDP
- Support sending network identity packet.
- Supports sending heartbeat packet data to network or serial port
- Supports 2 serial work modes: Network transparent transmission mode and HTTPD mode
- Dual watchdog timer for stability.



1. Get Start

Product link:

https://www.pusr.com/products/cellular-modem-routers-usr-g781.html

Setup software:

https://www.pusr.com/support/download/usr-g781-setup-software-v1-0-0-0.html



Figure 2 Download Page

If you have any question, please submit it back to customer center: http://h.usriot.com

1.1. Application

1.1.1. Application Diagram

When you start using module, the first step is to configure APN settings.

<u>2.1.APN</u> is chapter for APN settings.





Figure 3 Application diagram

1.1.2. Hardware Dimensions

Figure 4 Hardware dimensions

units: mm



1.1.3. Hardware Interface



Figure 5 Hardware interface



Figure 6 Hardware interface



Interface	Information		
LTE antenna	Stick antenna and sucker antenna for chosen		
Reload button	Press button for $3 \sim 15$ s to reload to factory settings		
Ethernet port	WAN/LAN port can be switch by serial command		
Power supply	DC 9~36V power supply		
RS232 DB9	5 wires DS222(TYD /DYD /CND /DTS /CTS)		
female	5 WIES 83232 (17D/ 88D/ 810/ 813/ 613)		
RS485 terminal	3 wires RS485: A+/B-/GND		
SIM card socket	Insert SIM card here		

Figure 7 Interface information

1.1.4. LED Indicator

Indicator	Status		
Dowon	On: Power on		
rowei	Off: Power off		
	Red: 2G network		
NET	Blue: 3G network		
	Purple: 4G network		
	Off: No network		
WODK	On: Working		
WORK	Off: Not working		
SIM	On: SIM card detected		
31 M	Off: SIM card not detected		
	On: Socket A connected		
LINKA	Off: Socket A disconnected		
	On: Socket B connected		
LINKD	Off: Socket B disconnected		
ТУЛ	On: Sending data to serial		
IND	Off: No data sending to serial		
PYD	On: Receiving data from serial		
ΝΑυ	Off: No data receiving from serial		

Figure 8 Hardware Indicator

1.2. Module Default Parameters

Work mode	Transparent mode
Server Address	test.usr.cn
Server Port	2317
Serial Parameters	115200, 8, 1, None
Heartbeat packet	www.usr.cn

Figure 9 Default parameters



1.3. Basic Parameters

Parameter		Index		
CIM cand and antonna	SIM/USIM card	Six pin SIM card interface, 3V/1.8V SIM card		
SIM caru anu antenna	Antenna	SMA interface, 5dBi antenna		
	Wired Internet interface	WAN*1 and LAN*1		
	Data Interface	RS232:300bps - 460800bps		
	Data Interface	RS485:300bps - 460800bps		
	Indicator LED	LINKA, LINKB, TXD, RXD, POWER, NET, WORK, SIM		
	Working Voltage	DC 9V~36V		
Hardware Parameters	Working Current	Average current 180mA@12V Peak Current 300mA@12V		
	Working Temp.	-25℃~85℃		
	Storage Temp.	-40°C~125℃		
	Working humidity	10%~90%		
	Storage humidity	5%~90%		
	Work Mode	Transparent Mode, HTTPD Client Mode		
	Setting Command	AT+ Command Structure		
Softwara Daramators	Network protocol	TCP/UDPDNS/HTTP/FTP		
Soltware rarameters	Max TCP connections	4		
	User Configuration Method	Setting Software, AT command and Web Server configuration		
	VPN	Support PPTP		
	Static routing management	Support		
	Firewall	Support		
	Network diagnosis	Support		
	Remote Management	Support		
Coftware Eurationa	Transparent Transmission	Support TCP Server/TCP Client/UDP Server/UDP Client		
Soltware Functions	HTTP Protocol	Support		
	Transmission			
	Heartbeat Packet	Support		
	Identity Packet	Support IMEI/ICCID/self-defined identity packet		
	Baud Rate Synchronization	Support		
	USR Cloud	Support		

Figure 10 Basic parameters



1.4. Frequency Band

	Model USR-G781 - Versions 4M				
	Global	-43	-Е	-A	-AU
	Operating Band	Operating Band	Operating Band	Operating Band	Operating Band
	1	1	1		1
				2	2
	3	3	3		3
				4	4
			5		5
FDD-LTE			7		7
		8	8		8
				12	
			20		
					28
	38	38	38		
TDD-LTE	39	39			
	40	40	40		40
	41	41	41		
	1	1	1		1
				2	2
WCDMA				4	
			5	5	5
	8	8	8		8
CDMA1X		800MHz			
CDMA2000-EVD0					
					2
GPRS	3	3	3		3
	8	8	8		5
					8

Figure 11 Frequency Band



1.5. Hardware Introductions

Below is the hardware interface schematic diagram of USR-G781:



Figure 12 Hardware interface schematic diagram



2. Product Functions

2.1. APN

Different operator have different APN (access point name), if you use the SIM card from the operator. You must know the APN. You can ask your SIM card operator for APN.

There are four parameters about APN. Those are APN Name, User Name, Password and Encrypt. Sometimes only configure APN Name is enough. User can configure the APN settings by Web Server or Setup software as follows:

USR IOT Iot Experts				Be honest, Do best! Auto Refresh ON 中文 English
USR-G781				
> Status > Services	APN Setting			
✓ Network Interface	APN Name: User Name:	CMNET		
VPN Setting Static IP	Password:			
Static Routes Diagnosis	Encrypt	None	Save&Apply	
> Firewall> transmission				
> System				



Figure 13 APN configuration



2.2. Router Functions

This chapter introduces the Router functions of USR-G781, as the following diagram shown, you can get an overall knowledge of it.



Figure 14 Router Functions diagram

2.2.1. Configuration Procedure

Basic procedure as follows:

Step1: Keep USR-G781 in power off condition.

Step2: Insert SIM card.

Step3: Connect antenna.

Step4: Power the USR-G781.

Step5: Wait about one minute, NET LED light with purple, USR-G781 can connect to 4G network.

Connection diagram as follow:



Figure 15 Application diagram

User can access network through USR-G781. PC connect to USR-G781 by LAN interface and PC should open DHCP function.



2.2.2. Networking Mode

2.2.2.1. WAN+LAN+4G

Diagram as follows:



Figure 16 WAN+LAN+4G Application diagram

In this mode, users can connect to Internet through WAN or 4G. Default configuration is WAN has higher priority. When router can't connect Internet through WAN, it will change to 4G network.

2.2.2.2. LAN+LAN+4G

Diagram as follows:







In this mode, two devices can connect to router through LAN and access the Internet by 4G network. To adopt LAN+LAN+4G mode, user just need set WAN/LAN interface to LAN interface by Web Server as follow:

USR IOT	Be honest, Do best! AutoRefreahON #文 English
USR-G781 > Status > Services Vetwork Interface APN Setting VPN Setting Static IP Static Routes Diagnosis > Firewall > transmission > System	Interface setting Set how netword interface working Interface Overview WAN/LAN Selection WAN Setting LAN Setting Mode LAN Save&Apply

Figure 18 WAN/LAN interface switch

2.2.3. Features

2.2.3.1. 4G Interface

USR-G781 support one 4G interface to connect Internet. Functional diagram as follows:



Figure 19 4G Interface

When user use 4G interface, the most important thing is to configure the APN parameters. User can refer to <u>2.1.</u> <u>APN</u> to configure the APN parameters.

2.2.3.2. LAN Interface

When user set WAN/LAN interface into LAN mode, USR-G781 will have two LAN interface.

Default settings: Static IP address: 192.168.1.1; Subnet mask: 255.255.255.0; Open DHCP Server function.



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Technical Support: h.usriot.com

User can configure LAN interface by Web Server as follow:

USR IOT Iot Experts					Behonest, Do Auto Refresh C	o best! ∾ [⊕] x∣English
USR-G781 Status Services Network Interface APN Setting VPN Setting Static IP Static Routes	Interface setting Set how netword interface v Interface Overview W Protocol IPv4 Address Max Lease	Working VAN/LAN Selection WAN Setting DHCP Server 192.168.1.100 ~ 7	12 LAN Setting	4G Module Setting		
Diagnosis > Firewall > transmission > System	IPv4 Subnet IPv4 Gateway Expire Time	255 255 255 0 192.168.1.1 864000	we8.Apply			

Figure 20 LAN interface configuration

2.2.3.3. WAN Interface

USR-G781 has one WAN interface. Support DHCP Client and Static Address, default setting is DHCP

USR IOT Iot Experts	Be	honest, Do best! Auto Refresh ON 中文 English
USR-G781 Status Services Network Interface APN Setting VPN Setting Static IP Static Routes Diagnosis Firewall Transmission System	Interface setting Set how netword interface working Interface Overview WAN/LAN Selection WAN Setting LAN Setting 4G Module Setting Protocol DHCP Client Save&Apply	

Client. User can configure WAN interface by Web Server as follow:

Figure 21 WAN interface configuration

2.2.3.4. DHCP Server Function

DHCP default range of distribution from 192.168.1.100 to 192.168.1.254 and default address expire time is 86400 seconds (ten days). Address range and expire time can be changed.

User can configure DHCP Server function parameters by Web Server as follow:



Iot Experts

LISP_C781	
031(0/01	Interface setting
Charles	Set how netword interface working
Status	
Natwork	
Interface	Interface Overview WAN/LAN Selection WAN Setting LAN Setting 4G Module Setting
APN Setting	
VPN Setting	Protocol DHCP Server
tatic IP	IPv4 Address 192.168.1.100 ~ 192.168.1.254
Static Routes	Max Lease 100
Diagnosis	IPv4 Subnet 255 255 255 0
irewall	IPv4 Gateway 192.168.1.1
transmission	
System	Expire line 864000

Figure 22 DHCP Server function configuration

2.2.3.5. VPN Function

USR-G781 only support PPTP mode to achieve VPN function now. And Subsequent versions will support L2TP, GRE, openvpn, ipsec mode.

User can configure VPN function by Web Server as follow:

				Be hone:	st, Do best! Auto Refresh ON 中文 English
USR-G781	VPN				
> Status	Set the parameters of VPN				
V Services V Network	рртр				_
APN Setting VPN Setting Static IP	Enable Server Address	OFF •			
Static Routes Diagnosis	Username Password	lihuibinypn lihuibinypn			
 > Firewall > transmission > System 			Save&Apply		

Figure 23 VPN function configuration

2.2.3.6. Static Routes Function

User can set USR-G781 Static Route table to achieve self-defined routing rules. User can configure Static Routes by Web Server as follow:



Figure 24 Static Routes function configuration

2.2.3.7. Static IP Binding

User can bind IP address with MAC address and USR-G781 will distribute fixed IP address to some devices. User can bind IP and MAC by Web Server as follow:

USR IOT Iot Experts				Be honest	, Do best! to Refresh ON 中文 English
USR-G781	Static	IP and MAC			
 Status Services Network 					
Interface APN Setting		MAC	IP		
Static Routes	Add]	Save&Apply	Delete	
Diagnosis Firewall transmission 					
> System					

Figure 25 Static IP binding function configuration

2.2.3.8. Network Diagnosis

User can use ping a specified address to check the connection status.

User can use Network diagnosis function by Web Server as follow:



USR IOT Ict Experts	Be hone	st, Do best! Auto Refresh ON 中文 English
USR-G781	Diagnosis	e I
> Status	Test if the network is nomal by ping an address. Just input an address, no 'ping	
> Services	Ping	
✓ Network		
Interface		
APN Setting		
VPN Setting		
Static IP		
Static Routes		
Diagnosis		
> Firewall		
> transmission		
> System		

Figure 26 Network diagnosis

2.2.3.9. Firewall

By use Firewall function, user can set firewall Filter Table rules and Forward Table rules to manage Network security. And user can also add, delete and modify Firewall rules by sending iptables commands.

User can configure Firewall configuration by Web Server as follow:

Filter Table rules:

USR IOT				Be ho	onest, Do best! Auto Refresh ON 中文 English
USR-G781 Status Services	Firewall-Filter Configure filter rule	ś			
Network Firewall Filter Table Forward Table Advanced	Default Rules Direction Polocy	Input Rules Forward Rules Input Polocy Accept	Output Rules Forward Polocy Accept	Output Polocy	
> transmission > System			Save&Apply		





Forward Table rules:

			ļ	3e honest, AutoR	Do best! effeshON (寸文 English
USR-G781	Firewall-Forward				
> Status	Configure forward rules				
> Services					
> Network	Extranet >Intranet Intranet >Ex	dranet			
🛩 Firewall					
Filter Table Forward Table	Action Protocol Destination A	ddress Destination Port Mapping Addres	s Mapping Port		
Advanced	DNAT • TCP • 192 166 1 100	/32 8800 21 45 30 15	8800	Deele	
> transmission					
> System	DNAT TCP 152.168.1.101	32 8801 21.45.30.16	0088	De ete	
	UNAI TICP 152.160.1.102	/32 EE02 21.45.30.15	8003	De ete	
	DNAT TCP T192.168.1.103	/32 8803 21.45.30.15	8804	De ete	

Figure 28 Forward Table rules configuration

Sending iptables commands:

USR IOT		Be honest, Do best! AutoRefreebON #文 English
USR-G781	Firewall-Customized Command	
> Status	Configure the rules of firewall by customized commands	
> Services	iptables	
> Network		×
✓ Firewall		
Filter Table		
Forward Table		
Advanced		
> transmission		
> System		
	Clear Display	[*]

Figure 29 Sending iptables commands



2.3. DTU Functions

This chapter introduces the DTU functions of USR-G781, as the following diagram shown, you can get an overall knowledge of it.



Figure 30 DTU functions diagram

2.3.1. Work Mode

2.3.1.1. Transparent Mode

Transparent Mode: What you sent to serial will be forward to network. The communication is bidirectional.







Figure 32 Transparent mode diagram

<Illustration>:

USR-G781 supports 4 socket connections simultaneously: socket A, socket B, socket C and socket D, they are independent. Socket A supports TCP Server, TCP Client, UDP Server and UDP Client. Socket B, socket C and socket D support TCP Client, UDP Server and UDP Client.

User can configure the Transparent Mode by setup software as follow:



Figure 33 Transparent Mode configuration



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2.3.1.2. HTTPD Client Mode

HTTPD Client Mode: DTU will add the HTTP Header for every data from serial and transfer HTTP format data to Network. User needs to configure the HTTP Header before use this mode. User can use this mode transfer the serial data to HTTP server.



Figure 35 HTTPD Client Mode Diagram

User can configure HTTPD Client mode by setup software as follow:

PC Serial Parameters] : Cominame • Baudkate 115200	Parity/Data/Stop NONI + 8		Open PC Serial	serial port
100se Work Mode		Operation and Hints		benar pore
Transparent Mode HTTPD Clent Mo	de	Query all para	ameters	Save current parameters
	Serial	Enter Serial AT com	mand mode	Exit Serial AT command mode
HTTP server NetWork M2M device	Serial device	General operation process		*
TPD Client Mode parameters		1. Connect the module to	PC serial port, power	the module
		2. Click "Open PC serial"		
		3. Click "Query all parame	eters"	
HITP request type GET		4. Choose vork mode and	d configure related par	ameters
HTTP URL /1.php[3F]		5. Click "Save current para	ameters"	
HTTP server address that use co	- N.	•		
test usiter	Step 3: Choose	Step 2: Enter AT	Stop 5. Savo	1
HTTP server port 80	HTTPD Client	command mode.	narameters	Chain Cr Evilt AT
Over Time (s) 10	mode.		parameters	step 6: Exit Al
HTTP request Header Connection: chec(0D)(0A)				command mode.
	÷.			
E Hiter H I I P Header				
+				
Step 4: Configure HTTPD Client mode pa	rameters.			
			•	
dem Parameters		Router params	•	
Serial Serial BaudRate 115200 - Flow	Control NFC -			
Parity/Data/Stop NONE - 8	· 1 ·			

Figure 36 HTTPD Client mode configuration



2.3.2. Serial Port

2.3.2.1. Parameters Range

Items	Parameters			
Poud Poto	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200,			
Baud Rate	230400, 460800			
Data Bits	8			
Stop Bits	1, 2			
	NONE			
Parity	EVEN			
	ODD			
Flow Control /495	NFC: None Flow Control			
Flow Collti 01/465	485: When you use RS485, please choose this function			

Figure 37 Serial parameters

2.3.2.2. Serial Package Methods

For network speed is faster than serial. Module will put serial data in buffer before sending it to network. The data will be sent to Network as Package. There are 2 ways to end the package and send package to network - Time and Length.

2.3.2.2.1. Time Trigger Mode

If no data get from serial over the time threshold, it will end the package and send this package to network. The range of threshold is from $10ms \sim 60000ms$. Default is 50ms. If the serial keeping send data, this package will be 1K bytes.

2.3.2.2.2. Length Trigger Mode

The package will be sent to network when it up to length threshold. The range of length threshold is from 1 to 4096 bytes. Default is 1000 bytes.

2.3.2.3. Baud Rate Synchronization

When module works with USR devices or software, serial parameter will change dynamically according to network protocol. Customer can modify serial parameter by sending data conformed to specific protocol via network. It is temporary, when restart DTU, the parameters back to original parameters.



2.3.3. Features

2.3.3.1. Identity Packet Function



Figure 38 Identity packet

Identity packet is used for identify the device when module works as TCP client/UDP client. There are two sending methods for identity packet.

- Identity packet will be sent when connection is established. (Only for TCP client)
- Identity packet will be added on the front of every data package. (TCP client and UDP client)

Type of identity packet: ICCID, IMEI, USR Cloud and USER.

- ICCID, the unique identifier of SIM card, suitable to the application based on SIM card identification.
- IMEI, the unique identifier of DTU, suitable to the application based on device identification.
- PUSR Cloud, the identification code based on PUSR Cloud platform. For more information about PUSR Cloud, please go to https://www.pusr.com/page/PusrCloud.html.
- USER, user can use own editable identity packet data.

User can configure identity packet function by setup software as follow:

USR-G781 V1.0.0.21			AND DESCRIPTION AND ADDRESS.	
File Language Help				Stop 1, Open PC coria
[PC Serial Parameters] : ComName	▼ BaudRate 115200 ▼ Pa	arity/Data/Stop NONI	8 • 1 • Flow Control NONE • Open	PC Serial - Dort
Choose Work Mode			Operation and Hints	port.
Transparent Mode	HTTPD Clent Mode		Query all parameters	Save current parameters
	TCP/UDP Seria		Enter Serial AT command mode	Exit Serial AT command mode
PC NetWork	M2M device	Serial device	General operation process:	
Transparent Mode parameters			1. Connect the module to PC serial port	power the module
			 2. Click "Open PC serial" 	
			3. Click "Query all parameters"	
			4. Choose work mode and configure rel	lated parameters
Enable 🔸				
Socket D Step 3: Choose Transparent M Bearbeat Package	e ode. Step 4: Enable Id function and conf parameters.	entity packet îgure	5. Click "Save current parameters" Step 2: Enter AT command mode. paramters.	e Step 6: Exit AT command mode.
Chable Socket D Step 3: Choose Transparent M Chable Heatheat Package Zenable Gentty Package Reg Package D User-def User-def	e ode. Step 4: Enable Id. function and conf parameters. end Type Send register data as the ata Type User-defined data	entity packet igure	5. Click 'Save current parameters" Step 2: Enter AT Step 5: Save command mode. paramters.	e Step 6: Exit AT command mode.
Enable Socket D Step 3: Choose Transparent M Enable Heattbeat Package Reg Package S User-def Show Source Socket	e ode. Step 4: Enable Id. function and conf parameters. and Type Send register data as the data Type User-defined data	entity packet igure	5. Click 'Save current parameters" Step 2: Enter AT Step 5: Save command mode. paramters.	e Step 6: Exit AT command mode.
Enable Socket D Step 3: Choose Transparent M Enable Heartbeat Package Reg Package Si Zdentty Package Reg Package Si Reg Package D User-def User-def Show Source Socket Modem Parameters	e ode. Step 4: Enable Id function and conf parameters. and Type Send register data as the ata Type User-defined data	entity packet figure	5. Click 'Save current parameters" Step 2: Enter AT Step 5: Save command mode. parameters.	e Step 6: Exit AT command mode.
Enable Socket D Step 3: Choose Transparent M Enable Heartbeat Package Reg Package Si Reg Package D User-def Show Source Socket Modem Parameters Serial BaudRat Party/Data/Stc	e Contraction and configuration and configuration and configuration and configuration and configuration and the second se	entity packet figure	5. Click 'Save current parameters" Step 2: Enter AT Step 5: Save command mode. paramters.	e Step 6: Exit AT command mode.

Figure 39 Identity packet function configuration



2.3.3.2. Heartbeat Packet Function

Heartbeat packet: Module will output heartbeat packet data to serial or network periodically. User can configure the heartbeat packet data and time interval. Serial heartbeat packet can be used for polling Modbus data. Network heartbeat packet can be used for showing connection status and keep the connection.

Heartbeat packet is only available in transparent mode. User can configure heartbeat packet function by setup software as follow:



Figure 40 Heartbeat packet function configuration

2.4. Basic functions

2.4.1. Reload by Hardware

User default settings: User can save the settings as User default settings.

Press Reload button for 3~15 seconds and release, USR-G781 will restore user default settings.



3. Parameter Setting

There are two ways to configure USR-G781. They are Web Server configuration and AT command. Web Server configuration mainly configure router functions and AT commands mainly configure DTU functions. We also provide the setup software based on serial AT command. You can download the setup software in our website https://www.pusr.com/support/download/usr-g781-setup-software-v1-0-0-0.html.

3.1. Web Server Configuration

User can connect PC to USR-G781 through LAN interface and set PC as DHCP. Then enter Web Server to

configure. Web Server default parameters as follows:

Parameter	Default settings
Web Server IP address	192.168.1.1
User name	Admin
Password	Admin

Figure 41 Web Server default parameters

After connecting PC to USR-G781, user can open browser and enter 192.168.1.1 into address bar, then log in user name and password, user will enter into Web Server. Web Server screenshot as follow:







5.2. m command

3.2.1. Serial AT Command

In transparent mode, SMS mode and HTTPD mode, you can enter AT command mode. Then you can send AT command to module. Setup software is based on this function. For entering AT command mode, please refer to this FAQ: https://www.pusr.com/news/enter-serial-command-mode.html.

3.2.2. Setup software

We also provide the setup software based on serial AT command. You can download the setup software in our website https://www.pusr.com/support/download/usr-g781-setup-software-v1-0-0-0.html. Software screenshot as follow:



Figure 43 Setup software

3.2.3. Transparent AT Command

When module in transparent mode, you can use "Password+AT command" format to send AT command via serial or network. If you use transparent AT command, you needn't enter AT command mode.

Default command password is **www.usr.cn** and user can send AT command AT+CMDPW to change password. Take querying firmware version with default password as an example, user need send **www.usr.cn#AT+VER[0D]** ([0D] represents carriage return and user must end the whole command with carriage return. It's same as serial AT command.).



4. Technical Specifications

Transmission power:

Technology		Nominal Power Máx.	Power Range
 GSM850/EG WCDMA LTE-FDD LTE-TDD 	SM900 (Máx. 33dBm±2dB) (Máx. 24dBm±3dB) (Máx. 23dBm±2dB) (Máx. 33dBm±2dB)	2.00 W 0.251 W 0.200 W 0.200 W	1.26 W - 3.16 W 0.125 W -0.316 W 0.125 W -0.316 W 0.125 W -0.316 W

Frequency Range

- GSM 900: 880 -915 MHz (TX); 935 960 MHz (RX)
- DCS1800: 1710 -1785 MHz (TX); 1805-1880 MHz (RX)
- WCDMA2100: 1922.6MHz-1977.4MHz
- WCDMA900: 882.6MHz-912.4MHz
- LTE :FDD: Band1: TX: 1920MHz~1980MHz, RX:2110MHz~2170MHz
- LTE :FDD: Band3: TX: 1710MHz~1785MHz, RX:1805MHz~1880MHz
- LTE :FDD: Band8: TX: 880MHz~915MHz, RX:925MHz~960MHz
- LTE :TDD: Band40: 2300MHz~2400MHz

Electromagnetic compatibility (EMC):

- Static IEC61000-4-2, level 2
- Pulsed Electric Field IEC61000-4-4, level 2
- Surge IEC61000-4-5, level 2



5. Guide Ordering:

Model	USR-G781	Version 4M: -E
Region	EMEA & APAC	
	TDD-LTE	B38/B40/B41
	FDD-LTE	B1/B3/B5/B7/B8/B20
Frequency	WCDMA	B1/B5/B8
	GSM/GPRS/EDGE	B3/B8

Model	USR-G781	Version 4M: -A
Region	North America	
	FDD-LTE	B2/B4/B12
Frequency	WCDMA	B2/B4/B5

Model	USR-G781	Version 4M: -AU
Region	Australia & Latin America & New Zealand & Taiwan	
	TDD-LTE	B40
	FDD-LTE	B1/B2/B3/B4/B5/B7/B8/B28
Frequency	WCDMA	B1/B2/B5/B8
	GSM/EDGE	B2/B3/B5/B8

Model	USR-G781	Version 4M: -43
Region	Part of APAC , please confirm the frequencies	
	TDD-LTE	B38/39/40/41
	FDD-LTE	B1/B3/B5/B8
Frequency	WCDMA	B1/B8
	TD-SCDMA	B34/B39
	EVDO/CDMA1X	BCO
	GSM/CPRS/EDGE	900/1800MHz

Example code ordering: Model USR-G781 and version 4M: -E ==> Code: USR-G781-E



6. Contact Us

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